

SUPPLEMENTARY NOTES ON AMERICAN MENISPERMACEAE. XI.
NEOTROPICAL TRICLISIEAE AND ANOMOSPERMEAE

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Introduction

It is satisfactory that good progress is being made toward our knowledge of both tribes. My work on this started back in 1937 and the most difficult tasks were: (1) getting specimens collected, particularly in fruit, which are the main basis for separating genera, and (2) matching up flowering material of the two sexes. The center of distribution of these two tribes is Amazonian Peru (and Brazil) which is poorly accessible and poorly collected botanically.

Pollen was studied by K. Thanikaimoni (6) and recently another paper on pollen by I. K. Ferguson (3) appeared in print. Both of these authors continue working on pollen of Menispermaceae and the study appears to be very promising, as there are several types of pollen in these tribes. A. M. W. Mannega has prepared a very extensive paper on the wood anatomy of the two tribes which will be published shortly in the *Journal of Arnold Arboretum*. Tertiary alkaloids of members of these two tribes, particularly of *Abuta* and *Sciadotenia*, have anti-tumor activity, and they were extensively studied by M. P. Cava (2) and his associates. I have already read drafts of three additional papers. The material for the studies of Mennega and Cava was supplied by me.

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L. L. Forman (3) is making progress in studies of Asiatic Menispermaceae, and his paper on Triclisieae was recently published. D. G. Rhodes (5) published a revision of Cissampelos and M. E. Mathias and W. L. Theobald recently completed a revision of Hyperbaena. The last two papers now make possible the treatment of Menispermaceae for Flora Neotropica.

Much work on the two tribes, Triclisieae and Anomospermeae, remains to be done. Chromosomes have to be studied. This is a difficult and time-consuming task because it involves shipment of seeds from South America and growing them in a hothouse, etc. The pollination in this group of plants is a fascinating subject, as the flowers are about the smallest I have seen in vascular plants. The plants are dioecious and plants of the different sexes are often spatially far apart. They are probably pollinated by very small flies, but this has yet to be proven by actual observation.

Since 1963, whenever possible, I have worked a few days annually in each of the many major herbaria in the U. S. A., Europe, and South America. As a result, there are practically no specimens that have not been annotated. I have deposited with the New York Herbarium two card files, one arranged by species, the other by collectors, of every specimen seen by me. This will greatly facilitate the work of a future monographer.

Since the last serial paper (Supplement X) was published, 200 new collections were examined, extending our knowledge of several species. Of special interest are collections from the high peaks of Panama and from Ecuador, very poorly collected botanically. The prize collection was the second collection of Curarea cuatrecasatii from Costa Rica, which was previously known from a single collection in Colombia. Extensions of range are reported for 30 species, and two species, Sciadotenia peruviana and Telitoxicum rodriguesii, are described as new. Eighty species and 11 subspecies are now known in the two tribes studied. In addition, eight new species and one subspecies await description, but they are represented only by sterile material. We expect novelties, particularly in Abuta, Sciadotenia and Anomospermum, from the Amazon Valley; also of Caryomene which is so difficult to collect, as it usually occurs in poorly accessible locations (on poor soils of terra firme on plateaus between rivers).

I. Chondrodendron Ruiz & Pavón, Syst. Veg. 261. 1798.

1. Chondrodendron tomentosum Ruiz & Pavón, Syst. Veg. 261. 1798.

Peru: San Martín: Mariscal Cáceres, Tocache Nuevo, Schunke 6443; Loreto: Rio Itaya, Thomas B. Croat 18788 (MO).
Ecuador: Napo: Rio Pucino, Al. Gentry 9764, 9772.

2. Chondrodendron platiphyllum (A. de St. Hilaire) Miers, Ann. Mag. Nat. Hist. III. 19:122. 1867.

Brazil: Rio de Janeiro: Macae de Cima, pr. Friburgo, G. E. J. Pabst 5252 (HBG), Plowman 2813 (GH) (praia de Itaipu).

3. Chondrodendron microphyllum (Eichler) Moldenke in Krukoff & Moldenke, Brittonia 3:11. 1938.

Brazil: Bahia: R. M. Harley et al. 17354 (24 km SW of Belmonte), 17476.

II. Curarea Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):7. 1971.

1. Curarea toxicifera (Weddell) Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):9. 1971.

Panama: Panama: Carti highway, Robert Dressler 4372; Canal Zone: premontane forest, M. Nee 7731 (MO); Colon: Mori & Kallunki 3695. Brazil: Amazonas: basin of Rio Negro, near mouth of Rio Curicuriari, Schultes et al. 8852; basin of Rio Purus, Jamamadi Mission Station, 30 km W of Labrea, Prance et al. 21256 (mixed with Abuta splendida). Peru: Amazonas: Brent Berlin 542 (near Huampami), Rubio Kayap 749, 1032, 1205, Ancuash 660; San Martín: Mariscal Cáceres, Schunke 6836, 7125 (mixed collection, flowers are of Abuta); Huanuco: Mathias & Taylor 5032; Loreto: Al. Gentry & Ayala 12699 (MO) (across Amazon River from Iquitos), Richard T. Martin & T. Plowman 1798 (MO) (lagunes of Rio Huallaga).

Prance states on the label of 21254: "Stem bark used as ingredient of Jamamadi Indian arrow poison mixed with several other plant ingredients. They call this plant 'Bicafo'."

3. Curarea tecunarium Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):12. 1971.

Brazil: Amazonas: Rio Içá, B. S. Pena 547 (IAN). Ecuador: Napo: Putumayo, 500 m alt., T. Plowman et al. 4029.

This is the first record of this species from the basin of Rio Içá.

4. Curarea cuatrecasasii Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):14. 1971.

Costa Rica: Puntarenas: Osa Peninsula, 2-1/2 mi SW of Ricon, Helen Kennedy 1640 (MO).

This is the first record of this species from Costa Rica; it has been known previously only from the type collection from Colombia.

III. Sciadotenia Miers, Ann. Nat.
Hist. II. 7:43. 1851.

2. Sciadotenia toxifera Krukoff & A. C. Smith, Bull. Torrey Club 66:308. 1939.

Brazil: Amazonas: basin of Rio Javari, Prance et al. 16941. Peru: San Martín: Mariscal Cáceres, Schunke 6605, 7263, 7530, 7911.

This is the first record of this species from the basin of Rio Javari.

4. Sciadotenia paraensis (Eichler) Diels in Engler, Pflanzenreich 4(94):86. 1910.

Brazil: Pará: B. G. S. Ribeiro 210 (IAN) (Ipean, capoeira), R. R. Santos & Carvalho 368 (Peixe Boi); Amazonas: Maués, M. F. Silva et al. 30 (INPA 31042).

This is the first record of this species from the basin of Rio Maués.

6. Sciadotenia eichleriana Moldenke in Krukoff & Moldenke, Brittonia 3:28. 1938.

French Guiana: P. J. M. Maas et al. 2217, J. S. de Granville 2397 (10 km SW of Saul). Brazil: Pará: Faro, capoeira, S. Assumpção & D. Coelho 54.

This is the first record of this species from French Guiana and from the State of Pará, Brazil.

- 6a. Sciadotenia (sect. Sychnosepalum) peruviana Krukoff & Barneby, sp. nov. juxta affinem S. eichlerianam Mold. ponenda, ab es foliorum lamina supra praeter venas primarias laevi, venulis scalariformibus reticulique impressis immersisve primo intuitu diversa.

Peru: Amazonas: Quebrada de Basusínuk, tributary of Huampami, 270 m (900 ft) alt., 16.IX.1972 (♀ fr), Rubio Kayap 97. -- Holotypus, NY.

Vines of unknown size, the young branches finely canaliculate, non-lenticellate, densely subretrorsely pilosulous with stiff hairs ± 0.2 mm, glabrescent. Petiole 3-8 cm, near middle ± 1.5 mm diam, dilated at both ends; blades ovate-cordate-acuminate 14-18 x 7.5-12 cm, when dry brownish-olivaceous, above smooth, dull, beneath densely pilosulous with erect grayish hairs (not tomentose), palmately 5-plinerved from petiole, the outer pair of primary veins short, weak, incurved, $1/4-1/5$ the length of blade subparallel to its cordate basal curve, the inner pair incurved-ascending $\pm 2/3$ the length of blade, the midrib giving rise on each side, well above middle, to 1-2 major incurved secondaries, these all above faintly, beneath very sharply and coarsely prominulous, the connecting scalariform and minor venules above impressed or fully immersed, beneath prominulous, the ultimate reticularion of well-defined areoles mostly > 1 mm diam. Inflorescence σ^7 unknown, Q either axillary subsapically 1-3-flowered or similar but borne on very short, supra-axillary leafless branchlets, 1-3 cm long, the primary axis, subobsolete pedicels, perianth, and gynophores of the fruit all densely fuscous-pilosulous; sepals (seen in bud only) 12; carpels 6. Gynophores in fruit ± 8 mm into a column, the free arms dilated and 3-angulate distally; drupe compressed-obovoid, 15-18 x 9-10 mm, the tawny-venutinous exocarp and (dry) scarcely fleshy mesocarp together ± 0.1 mm thick, the firmly chartaceous endocarp very shallowly engraved externally.

Related to S. sagotiana (Eichl.) Diels and S. eichleriana Mold., resembling both in the cordate 5-7-plinerved leaf-blades but different in the smooth upper leaf-surface, all venation beyond the primary and one or two secondary veins arising from the midrib being fully immersed on the upper face. The pubescence of the blade's lower face is simply erect-pilosulous, as in S. eichleriana, not entangled as in S. sagotiana. In outline, the blade is narrower than that of S. eichleriana and only 5 (not 7-9)-nerved from entry of the petiole. In shape, texture, and venation, the leaf of S. peruviana resembles that of S. (sect. Tylopetalum) solimoesana Mold. more nearly than that of any member of its own sect. Sychnosepalum which is characterized by a velvety-pilosulous, not minutely furfuraceous vesture throughout the pistillate inflorescence and drupe.

7. Sciadotenia sprucei Diels in Engler, Pflanzenreich 4(94):84. 1910.

Brazil: Amazonas: near Manaus, Prance et al. 23152, 23166, W. Rodrigues 9011 (INPA 28523); Mato Grosso: munic. Aripuana, B. G. S. Ribeiro 503 (IAN).

This is the first record of this species from Mato Grosso.

10. Sciadotenia ramiflora Eichler, Flora 47:395. 1864.

Ecuador: Napo: rain forest, alt. 350 m, Dwyer & MacBryde 9671.

This is the first record of this species from Ecuador.

12. Sciadotenia amazonica Eichler, Flora 47:395. 1864. & in Martius, Fl. Bras. 13':201, tab. 47, fig. 3. 1864.

Brazil: Amazonas: near Manaus, Igapó Açu, Prance 20519.

13. Sciadotenia duckei Moldenke in Krukoff & Moldenke, Brittonia 3:30. 1938.

French Guiana: Sout Macaque, R. Schnell 12083 (P). Brazil: Amazonas: near Manaus, Prance et al. 18802, s.n./1974, W. Rodrigues 9010 (INPA 28522), 9012 (INPA 28524), Osmarino et al. 322 (INPA 37387), L. Coelho 135 (INPA 35142), 169 (INPA 37410).

This is the first record of this species from French Guiana.

V. Telitoxicum Moldenke in Krukoff & Moldenke, Brittonia 3:42. 1938.

1. Telitoxicum minutiflorum (Diels) Moldenke in Krukoff & Moldenke, Brittonia 3:49. 1938.

Brazil: Amazonas: estrada Manaus-Itacoatiara, M. Silva et al. 82 (INPA 35444).

3. Telitoxicum krukovii Moldenke in Krukoff & Moldenke, Brittonia 3:44. 1938.

Brazil: Pará: basin of Rio Tocantins, Serra Buritirama, Murça Pires 12954 (IAN), 13014 (IAN).

This is the first record of this species from the State of Pará.

5. Telitoxicum inopinatum Moldenke in Krukoff & Moldenke, Brittonia 3:46. 1938.

French Guiana: Rivière Compté, Oldeman B-2061 (CAY).
Surinam: Pulle 329.

This is the first record of this species from French Guiana and Surinam; it has been known previously from six collections from Guiana.

6. Telotoxicum peruvianum Moldenke in Krukoff & Moldenke, Brittonia 3:45. 1938.

Peru: San Martín: Mariscal Cáceres, Schunke 6404.

8. Telotoxicum rodriguesii Krukoff sp. nov. Ab aliis speciebus congenris foliis oblongo-lanceolatis 3 vel 4 plo longioribus quan latis differt.

Liana with slender woody stem to 7 mm diam, the old bark furrowed lengthwise, not lenticellate, the young branchlets, petioles, and base of leaf-midrib beneath all densely pilosulous with ascending short fulvous hairs, the vesture deciduous, the leaves otherwise glabrous; petioles 1-8.5 cm long, abruptly bulbous-thickened at both ends; leaf-blades (dry) chartaceous, dark brownish-green both sides, lustrous above, oblong-elliptic or oblanceolate 9-25 x (2.5)3-7.5 cm (3-4 times longer than wide), rounded at base, short-acuminate at apex, plain between the main veins or nearly so; primary venation pinnate, the costa and (4)5-7 pairs of incurved-ascending secondaries shallowly impressed above, prominent beneath, the tertiary venation and reticulum prominulous only when very young, immersed when mature; inflorescence o (one seen) cauliflorous, simply racemose, ± 12 -flowered, the densely fulvous-pilosulous axis ± 7.5 cm long, the fruiting pedicels ± 4 mm long, 3 mm diam; drupe attached laterally slightly above base, oblong-ellipsoid, $\pm 30 \times \pm 20$ mm, the mealy-coriaceous exocarp densely brown-pilosulous externally when young, the shell of the endocarp brown, ± 1 mm thick.

Brazil: Amazonas: Manaus, Aleixo, estrada de acesso ao porto Mauá, W. Rodrigues 8859 (INPA 28074) (NY-holotype) (frts - 23/4-1970), 9021 (INPA 28533); Prance 11559, 11559a, s.n. (1971); W. Rodrigues & D. Coelho 9072 (INPA) (frts-30/03-1973) (Manaus-Itacoatiara Road, km 145, terra firme).

Rodrigues states on the label of 9072: "Cipó lenhoso; alto, ocasional na mata da terra firme; frutificação abundante; frutos amarelos."

We have been waiting for the collection of flowers since 1970 when the first specimen was collected, and we were reluctant to describe it without male flowers. Although it has been originally found near Manaus, and although Drs. Prance, Rodrigues and others were specifically searching for it, their attempts were not successful. I decided to describe it, as I do not want to wait another five years for the collection of flowers.

T. rodriguesii is immediately distinguished from other species, as its leaves are 3-4 times longer than wide.

Affinity doubtful without flowers, but probably near T. peruvianum.

VI. Abuta Barrere ex Aublet, Pl. Guian.
1:618. Pl. 250. 1775

1. Abuta rufescens Aublet, Hist. Pl. Guian. 1:618. Pl. 250. 1775.

French Guiana: near Cayenne, P. J. Maas et al. 2188, J. J. de Granville s.n. (Jan. 1976).

Male flowers of this species are needed to check whether or not Abuta splendida is a synonym of Abuta rufescens.

Dr. de Granville recently located a mature bush-rope of this species and I hope before long he will be successful in collecting its flowers. He also is on the lookout for the interesting Elephantomene eburnea and Sciadotenia eichleriana.

2. Abuta splendida Krukoff & Moldenke, Bull. Torrey Club 68:241. 1941.

Venezuela: Tachira: Al. Gentry 11099. Surinam: Brownsberg, J. P. M. Maas et al. 2364. Brazil: Pará: basin of Rio Jari, N. T. Silva 3118 (IAN); Territory of Roraima: vicinity of Auaris, $64^{\circ}25' W$, $4^{\circ}6' N$, alt. $+800$ m, Prance et al. 21440. Peru: San Martín: Schunke 6689.

According to Prance, this bush-rope is an ingredient of Curare of Sanama Indians who call it "batewadodo-peu."

This is the first record of this species from Tachira.

4. Abuta grisebachii Triana & Planchon, Ann. Sc. Nat. IV. 17:47. 1862.

Venezuela: Amazonas: Sierra Parima, Steyermark 107173. Brazil: Amazonas: basin of Rio Negro, Al. Gentry 13228, Cavalcante 3143 (MG), M. R. Cordeiro 416 (IAN), O. C. Nascimento et al. 272 (IAN), Murça Pires et al. 15870 (IAN) (upper Rio Negro); Roraima: vicinity of Auaris, $64^{\circ}25' W$, $4^{\circ}6' N$, alt. $+860$ m, Prance et al. 20087, 21437, 21439.

According to Prance, bark of this bush-rope is used as an ingredient of Curare by Sanama Indians (Roraima) who call it "batewadodo."

9. Abuta pahnii (Martius) Krukoff & Barneby, Mem. N. Y. Bot. Gard. 22(2):43. 1971.

Venezuela: Bolívar: Gran Sabana, km 198 S of El Dorado, alt. 1200 m, Steyermark 111312; Trujillo: Carache District, alt. +1000 m, Steyermark & Carreno 111638, 111656; Merida: mesa Bolívar, Santiago Lopez-Palacios 2208; Amazonas: Bunting et al. 3832. Brazil: Amazonas: basin of Rio Negro, Uaupés, M. M. Moreira s.n. (March 30, 1971) (MG). Peru: San Martín: Mariscal Cáceres, alt. 350-370 m, Schunke 6779; Loreto: 14 km SW of Iquitos, Croat 18515.

This is the first record of this species from Amazonas and Trujillo in Venezuela.

10. Abuta fluminum Krukoff & Barneby, Phytologia 25:38. 1972.

Peru: San Martín: Mariscal Cáceres, Tocache Nuevo, J. Schunke 4741 (GH).

The Schunke collection is probably from the same vine as Schunke 1971/33 (paratype ♀). He often sends specimens and wood samples to me under his field numbers and then sends the same collections to the Field Museum under his permanent numbers. This collection through error was cited as "Abuta panurensis" in 9th supplement.

13. Abuta imene (Martius) Eichler, Flora 47:389. 1864.

Venezuela: Amazonas: Rio Orinoco, below San Fernando de Atabapo, Al. Gentry et al. 10934. Brazil: Pará: basin of Rio Trombetas, terra firme, Prance et al. 22234, 22412. Peru: Loreto: Maynas, Rio Momon, McDaniel & Rimachi 16941.

This is the first record of this species from the basin of Rio Trombetas.

14. Abuta selloana Eichler, Flora 47:389. 1864.

Brazil: Minas Gerais: Candarela, alt. +1550 m, Mello Filho 3407.

15. Abuta panurensis Eichler, Flora 47:390. 1864.

Brazil: Amazonas: Prance et al. 17772 (Rio Cuieiras), s.n. (near Manaus).

16. Abuta solimoesensis Krukoff & Barneby, Mem. N. Y. Bot. Gard. 20(2):18. 1970.

Brazil: Pará: basin of Rio Jari, N. T. Silva 1872 (IAN);
 Amazonas: basin of Rio Solimões, Prance 17437, 17487.

This is the first record of this species from the basin of Rio Jari.

17. Abuta velutina Gleason, Bull. Torrey Club 58:361. 1931.

Venezuela: Amazonas: Sierra Parima, Steyermark 107083.
 Brazil: Amazonas: Prance et al. 20270, W. Rodrigues et al. 9098 (INPA 38353), Murça Pires et al. 75 (INPA 35897) (near Manaus).

18. Abuta obovata Diels, Notizbl. Bot. Gard. Berlin 13:29. 1936.

Venezuela: Amazonas: Rio Orinoco, below San Fernando de Atabapo, Al. Gentry et al. 10942. Brazil: Amazonas: basin of Rio Negro, above Manaus, Prance 22762.

20. Abuta brevifolia Krukoff & Moldenke, Bull. Torrey Club 69(2):160. 1942.

Brazil: Pará: basin of the upper Tapajos, W. R. Anderson 11075 (IAN).

This is the first record of this species from Rio Tapajos.

21. Abuta sandwithiana Krukoff & Barneby, Mem. N. Y. Bot. Gard. 20(2):18. 1970.

Brazil: Amazonas: basin of Rio Purus, Lago Marraha, Seringal São Clemente, terra firme, Prance et al. 21246; Mato Grosso: B. G. S. Ribeiro 526 (IAN); Rondonia: 50 km S of Porto Velho, Prance et al. 21305 (IAN).

Prance states on the label (21246): "Bark is scraped off, boiled in water until paste remains and used as an ingredient of Curare by Jarawara Indians who call the plant 'Ecápeha'."

This is the first record of this species from Mato Grosso.

24. Abuta racemosa (Thunberg) Triana & Planchon, Ann. Sci. Nat. IV. 17:48. 1862.

Panama: Canal Zone: Croat 17394, Robin Foster 1662 (DUKE).

25. Abuta panamensis (Standley) Krukoff & Barneby, Mem. N. Y. Bot. Gard. 20(2):22. 1970.

Belize: Toledo: John D. Dwyer 12920 (MO), 12937 (MO), 12986 (MO). Guatemala: Izabal: Elias Contreras 11459 (DUKE), Rolando Tun Ortiz 2451; Peten: Ortiz 769. Costa Rica: Hartshorn 1116; Cartago: Poveda 1220 (Turrialba), Roy W. Lent 2984 (above Rio Taus).

This is the first record of this species from Peten (Guatemala) and from Cartago (Costa Rica).

27. Abuta grandifolia (Martius) Sandwith, Kew Bull. 1937:397. 1937.

Surinam: Mopane creek, Vreden 11665 (U). Venezuela: Amazonas: Bunting et al. 3648. Brazil: Para: basin of the upper Rio Tapajos: Rio Cururu, Anderson 10512, 10738, 11112; basin of Rio Jari, N. T. Silva 3205 (IAN); basin of Rio Trombetas, Rio Trombetas, one km above Cachoeira Porteira, Prance et al. 22476; Amazonas: basin of Rio Solimoes, Prance et al. 17493, 18090, 21712, 21941; Byron Albuquerque et al. 453 (mun. Coari); basin of Rio Javari, Prance et al. 17282; basin of Rio Negro, A. Loureiro et al. s.n. (INPA 37536); Prance et al. 23163 and A. Loureiro et al. s.n. (INPA 37678) (near Manaus), Murça Pires 14231 (INPA) (Rio Univini), A. P. de Miranda et al. s.n. (22/3-74) and Loureiro et al. s.n. (26/3-74) (Manaus - Caracarai road, km 124-125); M. F. Silva et al. 208 and 344 (Manaus - Porto Velho road), A. Loureiro et al. s.n. (INPA 38997) (Autoz-Mirim), M. F. Silva et al. 299 (Lago do Castanha), M. F. Silva et al. 1519 (INPA 38601) (Rio Içana); Roraima: between Boa Vista and Caracarai, Murça Pires & P. Leite 14754 (IAN); Mato Grosso: J. A. Ratter et al. 10426 (IAN). Ecuador: Napo: Dwyer & MacBryde 9696 (alt. +350 m), Ruben N. Mowbray 70528 (MO) (near Lake Limoncocna). Peru: Loreto: Sidney McDaniel 11090 (MO), 13893 (MO); Loreto: Maynas, McDaniel & Rimachi 16865 (Rio Itaya), 17882 (Iquitos); Rimachi 139 (Iquitos, Rio Nanay); Loreto: Nauta, Rimachi 1084.

29. Abuta dwyerana Krukoff & Barneby, Mem. N. Y. Bot. Gard. 20(2):73. 1970.

Panama: Canal Zone: road to Pina, Busey & Mahler 346; Darien: N slope of Cerro Pierre, wet forest, alt. +300-700 m, Mori & Kallunki 5373 (MO), Al. Gentry & Mori 13968 (S slope of W peak of Cerro Tacarcuna massif, alt. 1500-1800 m).

This is the first record of this species from Darien.

32. Abuta sp.

Colombia: Chocó: hills behind Bahia Solano (Puerto Mutis), alt. 0-250 m, tropical wet forest, Al. Gentry & Enrique Forero 7203 (MO, NY).

This species in vegetative characters does not resemble any of the four which occur on the Pacific and Caribbean slopes in Colombia (A. antioquiiana, A. colombiana, A. seemanni, and A. racemosa). Petiole tomentose, 7.5-9.0 cm long with thickened apex; blades bullate, coriaceous, lustrous on both surfaces, oblong, rounded at base, shortly acuminate at apex, 13.0-17.0 cm long, 9.5-12.0 cm wide; 5-plinerved, the primary and secondaries deeply impressed above and prominently raised above, finely reticulate on both sides, the areoles on upper side $\pm 0.1-0.2$ mm diam.

VII. Caryomene Barneby & Krukoff, Mem.
N. Y. Bot. Gard. 22(2):52. 1971.

3. Caryomene olivascens Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):57. 1971.

Brazil: Pará: Jari, N. T. Silva 3343 (IAN).

VIII. Anomospermum Miers, Ann. Nat.
Hist. III, 14:101. 1864.

1. Anomospermum grandifolium Eichler, Flora 47:388. 1864.

Brazil: Amazonas: Maués, Prance et al. 22127.

This is the first record of this species from the basin of Rio Maués.

3. Anomospermum bolivianum Krukoff & Moldenke, ex Moldenke, Lilloa 5:234. 1940.

Brazil: Mato Grosso: basin of Rio Aripuanã, Prance et al. 18205, 18379.

This is the first record of this species from Mato Grosso.

- 4b. Anomospermum chloranthum Diels spp. confusum Krukoff & Barneby, Mem. N. Y. Bot. Gard. 22(2):69. 1971.

Peru: Loreto: vicinity of Pucallpa, Mathias 6039.

- 5a. Anomospermum reticulatum (Martius) Eichler ssp. reticulatum, Mem. N. Y. Bot. Gard. 22(2):73. 1971.

Brazil: Pará: Santarém-Cuiaba, J. Medeiros & L. R. Marinho 37 (IAN); Amazonas: Lago do Tatuquara, A. Loureiro et al. s.n./ (03/05-73); near Manaus, O. P. Monteiro et al. 132 (INPA 35954), Arthur et al. s.n. (INPA 39572), F. Figlioulo et al. s.n. (INPA 47354), Murça Pires et al. 14293 (INPA); Roraima: basin of Rio Branco, boca de Rio Ajarani, Murça Pires 14384 (IAN); Rondonia:

basin of Rio Madeira, Prance et al. 6580 (COL). Peru: Loreto: Rio Amazonas, Timothy Plowman 2456.

- 5b. Anomospermum reticulatum (Martius) Eichler ssp. dielsianum (Moldenke) Krukoff & Barneby, Mem. N. Y. Bot. Gard. 22(2):74. 1971.

Brazil: Acre: Cruzeiro do Sul, Prance et al. 12708 (GH).

- 5c. Anomospermum reticulatum (Martius) Eichler ssp. glabrescens Krukoff & Barneby, Mem. N. Y. Bot. Gard. 22(2):74. 1971.

Panama: Darien: Cerro Tacarcuna, S slope, alt. 1250-1450 m, Al. Gentry & S. Mori 13929 (MO).

This is the first record of this species from Panama. It has been known previously from nine collections from Venezuela.

9. Anomospermum sp. (See Supp. 10, p. 25)

Panama: Chiriqui: Burica Peninsula, near Costa Rican border, Croat 22158 (MO).

10. Anomospermum sp.

Colombia: Valle: costa del Pacifico, Rio Cajambre, silva, alt. 5-80 m, Cuatrecasas 17528 (F).

Probably of sect. Anomospermum and in vegetative characters this species does not resemble any other of this section. Petiole setulose, 1.5-3.0 cm long with thickened apex; blades bullate, coriaceous, dull or scarcely lustrous on both surfaces, oblong-ob lanceolate, cuneate to rounded at base, emarginate at apex, 6-13.5 cm long, 4.5-9.5 cm wide; 5-plinerved, the primary and secondaries deeply impressed above and prominently raised below, finely reticulate on both sides, the areoles ± 0.2 cm in diam.

IX. Orthomene Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):79. 1971.

1. Orthomene schomburgkii (Miers) Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):80. 1971.

Panama: Darien: Rio Balsa, J. A. Duke 8770. Surinam: Nassau: Lanjouw & Lindeman 2047 (U). French Guiana: Criquei Ouaqui, M. Lemoine 7829. Venezuela: R. R. Robertson & D. F. Austin 99; Amazonas: Sierra Parima, Steyermark 107421. Colombia: Chocó: Gentry 9376. Brazil: Pará: basin of Rio Jari, N. T. Silva 3199 (IAN), basin of Rio Trombetas, L. Coelho s.n. (INPA 42175), Prance et al. 22251 (km 0.75 N of road from

cachoeira Porteira, terra firme), basin of Rio Tapajos, W. R. Anderson 10861 (IAN); Amazonas: basin of Rio Solimões, Prance et al. 17310; basin of Rio Negro, M. F. Silva et al. 1159 (INPA 38214); Roraima: Prance et al. 10679 (Rio Uraricoeira), 11148 (INPA) and 11181 (INPA) (Rio Mucajáí); Acre: Rio Jurua-Mirim, Prance et al. 13073 (INPA); Mato Grosso: Prance et al. 19804 and P. Lisboa et al. 690 (basin of Rio Aripuana), Ratter et al. 1430, Prance et al. 18634.

These are the first records of this species from the basin of Rio Trombetas in the State of Para, also from Roraima, Panama, and the basin of Rio Aripuana in the State of Mato Grosso.

3. Orthomene hirsuta (Krukoff & Moldenke) Barneby & Krukoff, Mem. N. Y. Bot. Gard. 22(2):81. 1971.

Brazil: Amazonas: basin of Rio Solimões, Sao Paulo de Olivença, Prance 17349.

This is the first record of this species from the upper Solimoes. It has been known previously from nine collections from the basin of Rio Negro.

LIST OF EXSICCATAE

The first list of Exsiccatae covering the serial papers up to and including Supplement 8 was published in Memoirs of the New York Botanical Garden 22:84-89. 1971. The present list covers Supplements 9, 10, and 11. If a collector gathered his collection together with others, only his name is cited in this list. Collections with Dr. Prance's numbers are cited under Prance. The following abbreviations are used: A for Abuta, AN for Anomospermum, C for Caryomene, CH for Chondrodendron, CU for Curarea, O for Orthomene, T for Telitoxicum, and S for Sciadotenia. The number in parentheses corresponds with the species-number of this and other papers.

- Albuquerque, de, Byron W. P., 226 (AN5a), 310 (S2), 333 (AN5a), 453 (A27).
Ancuash, Ernesto, 660 (CU1).
Anderson, W. R., 10512 (A27), 10738 (A27), 10861 (O1), 11075 (A20), 11112 (A27).
Asplund, Erik, 5463 (A10), 14096 (S12), 14469 (S12).
Assumpção, S., 54 (S6).

Bailey, L. H., 101 (A24).
Bangham, W. N., 484 (A24).
Barquero, Humberto, 1970/202 (AN9).
Berlin, Brent, 542 (CU1).
Bernardi, A. L., 1861 (AN4a), 2717 (A18), 7664 (AN5c).
Biocca, 122/62 (CU3), s.n. (1963) (A4).
Blanco C., Carlos A., 1173 (A2).
Boschwezen, 6281 (A11).
Bristan, Narciso, 1126(6) (AN4c).
Bunting, 3648 (A27), 3832 (A9).
Burchell, W. J., 9867 (S4).
Busey, P., 346 (A29).

Cardona, Felix, 2601 (A9).
Cavalcante, P. B., 1773 (A2), 3143 (A4).
Coelho, L., 41 (CU1), 135 (S13), 169 (S13).
Contreres, Elias, 11459 (A25).
Cordeiro, M. R., 416 (A4).
Croat, T. B., 8909 (A24), 9233 (A24), 11474 (A24), 11671 (CH1), 12275 (A24), 13801 (CH1), 14583 (A24), 15004 (A24), 15053 (A24), 15109 (A24), 17394 (A24), 18515 (A9), 18662 (S12), 18788 (CH1), 19416 (A27), 22158 (AN9).
Cuatrecasas, J., 17528 (AN10).

Daniels, 1338 (O1).
Dressler, Robert, 4372 (CU1).
Duke, J. A., 4929 (AN4c), 8770 (O1).
Dwyer, John D., 9671 (S10), 9696 (A27), 12920 (A25), 12937 (A25), 12986 (A25).

- Fernandez, 2313 (O2).
Foster, Robin, 890 (A24), 1079 (A24), 1236 (CH1), 1388 (CH1),
1565 (A27), 1662 (A24), 2318 (A24).
Froes, R., 12387 (A20), 28209 (S9), 30178 (S7), 32948 (AN7),
33192 (A21).
- Gentle, Percy H., 7714 (A25).
Gentry, Al., 5829 (A24), 5830 (CU1), 7203 (A32), 7705 (A7),
7809 (A25), 7852 (A7), 9376 (O1), 9764 (CH1), 9772 (CH1),
10934 (A13), 10942 (A18), 11099 (A2), 12699 (CU1), 13228
(A4), 13929 (AN5c), 13968 (A29).
Granville, de, 40 (A27), C-79 (S1), 428 (O2), 654 (S1), 1024
(A27), 1042 (A27), 1073 (A27), 1188 (A27), 2397 (S6), B-3350
(O1), B-4374 (A27), B-4513 (A27), B-4572 (S1), s.n. (Jan.
1976) (A1).
- Harley, R. M., 10426 (A27), 11132 (AN5a), 11209 (A27), 17354
(CH3).
Hartshorn, Gary S., 1116 (A25).
Hatschbach, G., 16661 (A14).
- Irwin, H. S., 48358 (O2).
- Kayap, Rubio, 97 (S6a), 749 (CU1), 1032 (CU1), 1205 (CU1).
Kennedy, Helen, 1640 (CU4).
Klein, R., 6994 (A14), 7483 (A14), 9833 (A14).
Krukoff, B. A., 12104 (A15).
Kuhlmann, J. C., 424 (A3), 455 (A11).
- Lanjouw, J., 2047 (O1).
Lemoine, M., 7829 (O1).
Lent, Roy W., 2984 (A25).
Liesner, R. L., 1325 (CH1).
Lisboa, P., 690 (O1).
Lizot, Jacques, 76A (O1).
Lopez-Palacios, Santiago, 2208 (A9).
Loureiro, A., s.n. (26/3-1974) (A27), s.n. (03/05-1973) (AN5a).
- Maas, P. J. M., 2188 (A1), 2217 (S6), 2364 (A2).
Manara, Bruno L., 165 (A2).
Martin, Richard T., 1798 (CU1).
Mathias, Mildred E., 5022 (T6), 5032 (CU1), 6039 (AN4b).
Mattos, G., 13922 (A14).
McDaniel, S., 11090 (A27), 13893 (A27), 16865 (A27), 16941 (A13),
17882 (A27).
Medeiros, J., 37 (AN5a).
Mello Filho, Luiz Emygdio de, 1564 (CH3), 1725 (CH2), 3407 (A14).
Miranda, de, A. P., s.n. (22/3-74) (A27).
Molina, Antonio, 24713 (A25).
Moreira, M. M., s.n. (March 30, 1971) (A9).

Mori, S., 3695 (CU1), 5373 (A29).

Moss, A. Miles, 90 (S7).

Mowbray, Robert N., 70528 (A27).

Nascimento, O. C., 272 (A4).

Nee, M., 7731 (CU1).

Oldeman, R. A. A., T-163 (A27), T-283 (O1), T-360 (A27), T-550 (O2), T-712 (O2), T-715 (S1), 1483 (A27), 1515 (O1), B-1830 (A27), B-1899 (S1), 1926 (A27), 1977 (S1), B-2061 (T5), B-2116 (A27), B-2189 (A27), 2191 (A27), B-2320 (A27), B-2500 (A27), 2766 (A27), B-2844 (O1), 2980 (A27), 3180 (S1), 3231 (AN4b), 3263 (S1), B-3925 (E1), B-4341 (A16). 2197 (A27).

Ortiz, Rolando T., 769 (A25), 2451 (A25).

Osmarino, 322 (S13).

Pabst, G. E. J., 5252 (CH2).

Pena, B. S., 547 (CU3).

Pinheiro, R. S., 1330 (CH2).

Pires, João Murca, 75 (A17), 12954 (T3), 13014 (T3), 14231 (A27), 14293 (AN5a), 14384 (AN5a), 14754 (A27), 15870 (A4).

Plowman, T., 2456 (AN5a), 2813 (CH2), 4029 (CU3).

Poveda, Luis J., 1220 (A25).

Prance, G. T., 2562 (AN5a), 6580 (AN5a), 10656 (A27), 10679 (O1), 10809 (AN6), 11036 (A2), 11148 (O1), 11181 (O1), 11272 (CU1), 11557 (A27), 11559 (T8), 11575 (A15), 11620 (S13), 11627 (A20), 12116 (A27), 12121 (A20), 12437 (A18), 12461 (A21), 12562 (AN5b), 12615 (A20), 12708 (AN5b), 12781 (A27), 13073 (O1), 13866 (O1), 13931 (CU1), 13948 (A27), 14973 (A15), 15185 (A17), 15215 (O1), 15386 (T1), 15558 (S14), 15714 (A27), 16005 (A27), 16146 (CU3), 16453 (CU3), 16941 (S2), 17282 (A27), 17310 (O1), 17349 (O3), 17437 (A16), 17487 (A16), 17493 (A27), 17772 (A15), 18090 (A27), 18205 (AN3), 18379 (AN3), 18634 (O1), 18802 (S13), 19804 (O1), 20087 (A4), 20270 (A17), 20519 (S12), 21246 (A21), 21256 (CU1), 21305 (A21), 21437 (A4), 21439 (A4), 21440 (A2), 21712 (A27), 21941 (A27), 22127 (AN1), 22234 (A13), 22251 (O1), 22412 (A13), 22476 (A27), 22762 (A18), 23152 (S7), 23163 (A27), 23166 (S7).

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Ratter, J. A., 937 (A27), 1205 (A27), 1430 (O7), 1760 (A27), 10426 (A27).

Reitz, P. R., 1901 (A14), 4128 (A14).

Ribeiro, B. G. S., 210 (S4), 503 (S7), 526 (A21).

Rimachi, 139 (A27), 1084 (A27).

Robertson, R. R., 99 (O1).

Rodrigues, W., 8711 (A27), 8855 (A27), 8859 (T8), 8864 (S13), 9010 (S13), 9011 (S7), 9012 (S13), 9021 (T8), 9072 (T8), 9098 (A17).

Roe, Keith, 737 (A25).

- Santos, R. R., 368 (S4).
Santos, T. S., 498 (CH3), 1646 (CH3).
Sastre, C., 1557 (A27).
Schnell, R., 12083 (S13), 12126 (O1).
Schultes, R. E., 8852 (CU1), 9840c (A9).
Schunke V., José, 2545 (AN4b), 3795 (A16), 3819 (S2), 3830 (CU1),
3880 (CH1), 3890 (O1), 3953 (S2), 4141 (O1), 4246 (A27), 4559
(A9), 4561 (O1), 4605 (S2), 4634 (S2), 4637 (S2), 4638 (A16),
4639 (S2), 4685 (A10), 4741 (A10), 4746 (T6), 4801 (CH1),
4966 (A9), 5024 (S2), 5168 (A2), 5183 (A16), 5185 (A16), 5498
(A4), 6404 (T6), 6443 (CH1), 6545 (O1), 6605 (S2), 6689 (A2),
6779 (A9), 6836 (CU1), 7263 (S2), 7530 (S2), 7911 (S2),
1970/28 (A9), 1970/29 (O1), 1971/30 (S2), 1971/31 (A16),
1971/32 (S2), 1971/33 (A10), 1971/34 (A10), 1971/36 (T6),
1971/38 (A2).
Schwacke, C. A., 551 (S13), 3460 (A27), 3461 (A15), 3464 (A2),
3467 (S13), 3468 (O3), 5809 (A14).
Silva, M. F., 30 (S4), 82 (T1), 208 (A27), 299 (A27), 344 (A27),
1159 (O1), 1519 (A27).
Silva, N. T., 1872 (A16), 3118 (A2), 3199 (O1), 3205 (A27), 3343
(C3), 3423 (T4), 3431 (AN3), 3432 (A20), 3433 (A2), 3434 (T4).
Souza, Mario, 3441 (A25).
Steyermark, J. A., 104578 (A18), 106960 (A30), 107083 (A17),
107173 (A4), 107421 (O1), 111312 (A9), 111638 (A9), 111656
(A9).
Sucre, D., 4223 (CH2).

Tessmann, G., 4689 (AN4b).
Tyson, 4547 (A29).

Victorio, 2392 (A14).
Vreden, L. B. B., 11665 (A27).

Wetmore, A., 76 (A24).
Wolfe, Frank, 12339 (AN5h), 12340 (AN5h).
Woytkowski, Felix, 5108 (CU1), 5121 (S2), 5535 (A6), 7092 (CH1).

Bibliography

(In order to conserve space, I am citing here only the papers which are not cited in Supplements VII-X.)

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4. Krukoff, B. A., and R. C. Barneby. Supplementary notes on American Menispermaceae. X. Lloydia 37:23-29. 1974.
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